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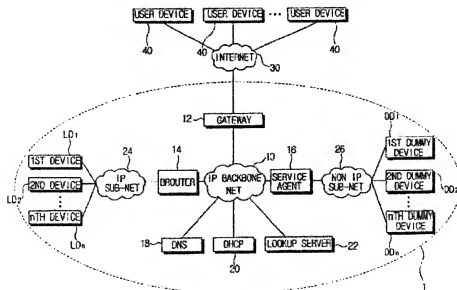
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(54) Apparatus and method for controlling a device in a home network and a home network system employing the same

(57) Apparatus and method for controlling devices within a home network (1), and a home network system employing the same. The apparatus (22) for controlling a plurality of devices (LD1-LDn, DD1-DDn) connected in the home network includes a batch processing portion (4) for generating a batch command for a certain service of services provided by the plurality of devices, to pro-

cess the certain service as one job, and a control portion (6) for controlling when a batch command is selected, the control portion (6) for controlling a certain device that is designated by the selected batch command operates in accordance with the selected batch command. Accordingly, operations of the devices (LD1-LDn) within the home network (1) for providing the service can be processed as one job.

FIG. 3



## Description

[0001] The present invention relates to a home network, and more particularly to a method for providing a set of pre-selected services

[0002] These days, due to advanced communication technology, many devices in home like information communicating devices such as personal computers, faxes, printers, etc. AV devices such as TVs, DVDs, VCRs, etc. and home appliances such as electric cookers, refrigerators, washing machines, etc. are connected and used in a network under an external control. Studies are also under way to find out a more efficient method for providing service through such a network.

[0003] As background information, Figure 1 is a flow-chart for explaining a method for controlling devices in a home network

[0004] Referring to Figure 1, first, a web browser is activated in a device (step S102).

[0005] The device is accordingly connected to a URL of a lookup server that stores information about the devices connected through the home network (step S104). The lookup server will be described in greater detail later.

[0006] Then as shown in Figure 2(a), a homepage displaying a list of devices connected in the home network is downloaded (step S106). In the homepage, every available device is displayed in the form of an icon.

[0007] A user selects one from the list of devices (step S108). Accordingly, the user is connected to a dynamic IP address of the selected device, and the homepage of the selected device is displayed (step S110).

[0008] If the user clicks on an icon representing a digital TV D1 (DTV 01), the homepage of the DTV is displayed as in Figure 2(b). The reference character 'M' represents a cursor of a mouse.

[0009] The homepage of the selected device displays a list of available services.

[0010] The user selects one from the list of available services provided by the selected device (step S112). Then a sub-page, showing details of the selected service, is displayed (step S114).

[0011] If the user selects a service 3 in the screen of Figure 2(b), the screen is displayed as in Figure 2(c)

[0012] The user also selects the particulars of the selected service (step S116). According to the selected particulars, the selected device performs the selected service (step S118).

[0013] For example, if turning-on the DTV is the selected service, the DTV is turned on as in Figure 2(d).

[0014] Although the detail of the selected service is selected once in the above description for the simplicity of description, there often is a case when the detail has to be selected more than once according to the type of the selected service.

[0015] Since the user has to select each device, service, and item related to the service every time he/she needs to use the service, the user experiences the in-

convenience of having to carry out a set of routines in order to use the service.

[0016] Also, although the conventional method for providing the service through the home network uses a graphical user interface for the convenience of the user, the user still experiences inconvenience since he/she has to activate many steps until he/she finally activates the service.

[0017] Also, even for repeating the same service, the user still has to go back to the start and activate many steps.

[0018] The present invention has been made to overcome or at least reduce the above-mentioned problems, and accordingly, it is an aim of the present invention to provide an apparatus and method for controlling devices connected in a home network that is easier and more efficient for the user

[0019] According to a first aspect of the present invention there is provided an apparatus for controlling a plurality of devices connected in a home network, the apparatus comprising: a batch processing portion that generates a batch command for a certain service of a plurality of services provided by the plurality of devices, to process the certain service as one job; and a control portion that controls a certain device that is designated by the batch command to operate in accordance with the batch command when the batch command is selected.

[0020] Preferably, when a batch command name, a name of the certain device, the service of the certain device, and details related to the service are selected, the batch processing portion records the selected items sequentially and generates a batch command based on the recorded items, and the certain device operates in accordance with the batch command.

[0021] Further preferably, the batch processing portion displays a list of the stored batch commands, for selecting a batch command from the list that corresponds to a service desired by a user.

[0022] Preferably, the apparatus also comprises a device information storing portion for storing IP addresses allocated to the plurality of devices; and a transceiving portion for transmitting the batch command to an IP address of the certain device that is designated by the selected batch command when the batch command is selected.

[0023] According to a second aspect of the present invention there is provided a method for controlling at least one of a plurality of devices connected in a home network, the method comprising the steps of: a) selecting a service from a plurality of services provided by said at least one of the plurality of devices, to process the service as one job; b) generating and storing a batch command with respect to the selected service; and c) when the batch command is selected, controlling a certain device of the plurality of devices designated by the selected batch command to operate in accordance with the selected batch command.

[0024] Preferably, the step (b) comprises: recording certain selected data in order, wherein said certain selected data is a name of the batch command, a name of the certain device, the service, and details related to the service; and generating the batch command for operating the certain device to perform the service in accordance with the recorded data, and storing the generated batch command.

[0025] Preferably, the step (c) further comprises the step of displaying a list of stored batch commands, and selecting one batch command corresponding to the selected service from the list of the stored batch commands.

[0026] Preferably, when the batch command is selected, the step (c) further comprises the step of transmitting the selected batch command to an IP address of the certain device designated by the batch command.

[0027] According to a third aspect of the present invention there is provided a home network system comprising at least one of a plurality of devices that provide services; and a lookup server that generates a batch command for a certain service if the certain service is selected from the services provided by said at least one of the plurality of devices, the lookup server controls a certain device if the certain device is designated by the batch command that is selected.

[0028] For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 is a flowchart for illustrating a conventional method for controlling devices within a home network;

Figure 2(a) is a view showing a screen that displays a home page of the home network of Figure 1;

Figure 2(b) is a view showing a screen that is displayed when a DTV icon is clicked in the screen of Figure 2(a);

Figure 2(c) is a view showing a screen displayed when a service 3 is selected in the screen of Figure 2(b);

Figure 2(d) is a view showing a screen displayed when a service ① is selected from the screen of Figure 2(c);

Figure 3 is a view showing the construction of a system that controls the devices within the home network;

Figure 4 is a block diagram of the lookup server of Figure 3;

Figure 5 is a flowchart for illustrating a process of generating a batch file with a method for controlling the devices within the home network 1 in accordance with the present invention;

Figure 6(a) is a view showing a screen that displays a home page of the home network of Figure 3;

Figure 6(b) is a view showing a screen displayed when a DTV icon is clicked in the screen of Figure 6(a);

Figure 6(c) is a view showing a screen displayed when a service 3 is selected in the screen of Figure 6(b);

Figure 6(d) is a view showing a screen displayed when a service ① is selected in the screen of Figure 6(c);

Figure 7 is a flowchart for showing the process of activating a batch file with the method for controlling the devices within the home network in accordance with the present invention;

Figure 8(a) is a view showing a screen that displays the homepage of the home network of Figure 3; and

Figure 8(b) is a view showing a screen displayed when a batch command 'DTV TURNON' is selected in the screen of Figure 8(a).

[0029] An apparatus and a method for controlling devices in a home network and a home network system employing the same in accordance with the preferred embodiment of the present invention, will be described in greater detail with reference to the accompanying drawings.

[0030] Figure 3 is a view showing the construction of the system that controls the devices within the home network.

[0031] As shown in Figure 3, a plurality of external user devices 40 are connected to a home network 1 through the Internet 30.

[0032] The home network 1 includes an IP backbone net 10, a gateway 12, a router 14, a service agent 16, a DNS server 18, a DHCP server 20, a lookup server 22, an IP sub-net 24, a non-IP sub-net 26, first through nth devices (LD1-L<sub>n</sub>) connected to the IP sub-net 24, and first through nth dummy devices (DD1-DD<sub>n</sub>) connected to the non-IP sub-net 26.

[0033] The DHCP 20 provides the devices within the home network 1 with dynamic IP addresses.

[0034] In order to designate the plurality of devices connected to the home network 1, the home network 1 uses a dynamic IP address that is exclusively used within the home network 1.

[0035] The gateway 12 is an access node for the

home network 1, which enables the home network 1 to communicate with external networks inclusive of other home networks.

[0036] The DNS server 18 provides the devices within the home network 1 with host names. The host name can be made by a user, or the user may simply use the default name that is made to represent the function of the device.

[0037] The IP sub-net 14 is a network in which intelligent devices having self-control ability are connected.

[0038] The router 14 serves as a bridge and a router, and exists between the IP backbone net 10 and the IP sub-net 24. The router 14 finds a path of an IP packet that is transmitted between the backbone net 10 and the IP sub-net 24.

[0039] The non-IP sub-net 26 is a network in which dummy devices are connected. The dummy devices, such as lamps, doors, washing machines, etc., have no self-control ability, but simply operate in a predetermined way.

[0040] The service agent 16 exists between the non-IP sub-net 26 and the IP backbone net 10, to maintain the service of the dummy devices.

[0041] Further, for the dummy devices that are connected to the non-IP sub-net 26, the service agent 16 is allocated with the dynamic IP addresses from the DHCP 20 and maintains the allocated dynamic IP addresses.

[0042] For the dummy devices, the service agent 16 also maintains the status of the dummy devices such as on/off status, or connection status to the home network 1.

[0043] The lookup server 22 will be described in greater detail below.

[0044] Figure 4 is a block diagram of the lookup server 22 of Figure 3.

[0045] The lookup server 22 includes a device information storing portion 2, a transceiving portion 3, a batch processing portion 4, a batch command storing portion 5, and a control portion 6.

[0046] The device information storing portion 2 stores information about the devices connected to the home network 1, such as a dynamic IP address allocated to the device, ID of the device, device type, vendor, model name, serial number, or the like.

[0047] When the batch command is selected by the user, the transceiving portion 3 transmits the batch command to a destination device designated by the batch command.

[0048] The batch command designates the name of the device corresponding to the selected service, the service name, and the details of the service.

[0049] The batch processing portion 4 generates a batch command for a service that is required to be processed at a batch job. By the batch processing, data can be processed as one job. Also, once the batch command is generated, the user is only allowed to select the batch command, and has no control over the batch command processing itself.

[0050] The batch processing portion 4 traces and records the clicks made by the user when selecting the service, and generates a batch command based on such traced selections and stores the batch command in the batch command storing portion 5.

[0051] When transmitting the batch command through the transceiving portion 3, the control portion 6 converts the name of the device into an actual IP address and transmits the converted IP address.

[0052] Figure 5 is a flowchart for showing the process of generating a batch file with a method for controlling the device in the home network in accordance with the present invention.

[0053] Referring to Figure 5, the web browser is activated in the user device (step S202).

[0054] Accordingly, the user device is connected to the URL of the lookup server that stores information about the devices connected in the home network (step S204).

[0055] Then as shown in Figure 6(a), a master page 50 is displayed (step S208).

[0056] The master page 50 includes not only a list 52 of every device available in the home network 1, but also a list 54 of the batch commands stored in the lookup server.

[0057] If the user connected to the lookup server wants a batch processing for a certain service, the user selects a 'batch' menu 56 in the master page 50 prior to activating the service (step S208). According to the 'batch' menu 56, the batch processing portion 4 functions to generate the batch command.

[0058] Then the user inputs the name of the batch command (step S210). Any name is good for the name of the batch command, but it is more preferable that the name of the batch command clearly represents the function of the corresponding service.

[0059] Then the user selects a device for the service (step S212).

[0060] If the user clicks on the digital TV (DTV) 01 icon in the screen of Figure 6(a), the homepage of the DTV is displayed as in Figure 6(b).

[0061] Then the user selects a service from the service list provided by the homepage of the selected device (step S214).

[0062] If the service 3 is selected in the screen of Figure 6(b), a sub-page indicating details of the selected service 3 is displayed.

[0063] Again, the user selects one of the details of the selected service 3 in the screen of Figure 6(c) (step S216).

[0064] Then the batch processing portion 4 of the lookup server 22 traces and records the data about the above operations related to the service selection, such as a unique local device name, a service name, etc.

[0065] According to the recorded data about the operations related to the service selection, the batch processing portion 4 generates a batch command that activates the service of the device selected by the user,

and then stores the batch command in the batch command storing portion 5 (step S218).

[0066] Figure 7 is a flowchart for illustrating the process of activating the batch file with the method for controlling the devices within the home network in accordance with the present invention.

[0067] Referring to Figure 7, a web browser is activated in a user device (step S302). Accordingly, the user device is connected to the lookup server (step S304).

[0068] Then as shown in Figure 8(a), the master page is displayed (step S306). Then the user selects one batch command name from the batch command list 54 displayed in the master page 50 (step S308).

[0069] Then the batch command corresponding to the selected batch command name is transmitted from the lookup server to the corresponding device (step S310), and the corresponding device activates the service in accordance with the batch command (step S312).

[0070] Figure 8(a) shows one example of the screen that displays the master page 50 of the lookup server of Figure 4.

[0071] As shown in Figure 8(a), the master page 50 displays not only the list 52 of every available device in the home network that the lookup server belongs to, but also the list 54 of the batch commands stored in the lookup server.

[0072] From the list 54 of the batch commands, the batch command name "DTV1 TURNON" represents the service that turns on the DTV1.

[0073] If the user selects the batch command name, "DTV1 TURNON", the batch command stored in the batch command storing portion 5 corresponding to the "DTV1 TURNON" is transmitted to the DTV1, and as shown in Figure 8(b), the DTV1 is turned on.

[0074] As described above, according to the apparatus and method for controlling the devices in the home network 1 and the home network system employing the same, the service operations of the devices in the home network 1 can be controlled to be processed in one step.

[0075] Further, since the user does not have to select every step to activate the service of the device every time the user wants the service, the user is saved from inconvenience.

[0076] Although the preferred embodiment of the present invention has been described, it will be understood by those skilled in the art that the present invention should not be limited to the described preferred embodiment, but various changes and modifications can be made within the scope of the present invention as defined by the appended claims.

[0077] The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

[0078] All of the features disclosed in this specification (including any accompanying claims, abstract and

drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

[0079] Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

[0080] The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

## Claims

1. An apparatus for controlling a plurality of devices connected in a home network, the apparatus comprising:

a batch processing portion (4) that generates a batch command for a certain service of a plurality of services provided by the plurality of devices, to process the certain service as one job; and

a control portion (6) that controls a certain device that is designated by the batch command to operate in accordance with the batch command when the batch command is selected.

2. The apparatus of claim 1, wherein, when a batch command name, a name of the certain device, a service of the certain device, and details related to the service are selected, the batch processing portion (4) records the selected items and generates the batch command based on recorded items so that the certain device performs the service.
3. The apparatus of claim 1 or 2, wherein the batch processing portion (4) displays a list of stored batch commands, for selecting the batch command that corresponds to a service from the list.

4. The apparatus of claim 1, 2 or 3 further comprising:

a device information storing portion (2) for storing IP addresses allocated to the plurality of devices; and

a transceiving portion (3) for transmitting the batch command to an IP address of the certain

device that is designated by the selected batch command when the batch command is selected.

certain device is designated by the batch command that is selected.

5. A method for controlling at least one of a plurality of devices connected in a home network, the method comprising the steps of:

a) selecting a service from a plurality of services provided by said at least one of the plurality of devices (LD1,DD1), to process the service as one job,

b) generating and storing a batch command with respect to the selected service; and

c) when the batch command is selected, controlling a certain device (LD1,DD1) of the plurality of devices designated by the selected batch command to operate in accordance with the selected batch command.

6. The method of claim 5, wherein the step b) comprises the steps of:

recording certain selected data in order, wherein said certain selected data is a name of the batch command, a name of the certain device, the service, and details related to the service; and

generating the batch command for operating the certain device to perform the service in accordance with the recorded data, and storing the generated batch command.

7. The method of claim 5 or 6, wherein the step c) further comprises the step of displaying a list of stored batch commands and selecting one batch command corresponding to the selected service from the list of the stored batch commands.

8. The method of claim 5, 6 or 7, wherein, when the batch command is selected, the step c) further comprises the step of transmitting the selected batch command to an IP address of the certain device designated by the batch command.

9. A home network system comprising:

at least one of a plurality of devices (LD1,DD1) that provide services; and

a lookup server (22) that generates a batch command for a certain service if the certain service is selected from the services provided by said at least one of the plurality of devices, the lookup server controls a certain device if the

FIG. 1

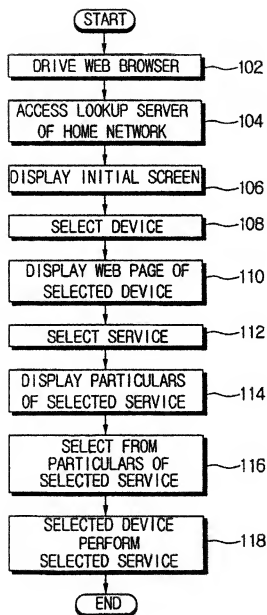


FIG. 2A

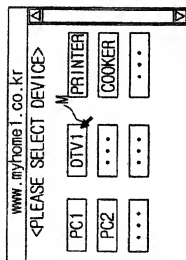


FIG. 2B

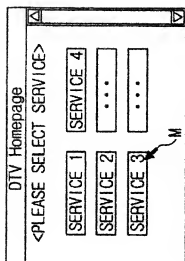


FIG. 2C

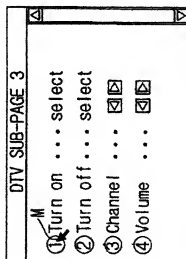


FIG. 2D

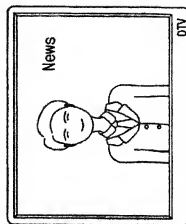




FIG.3

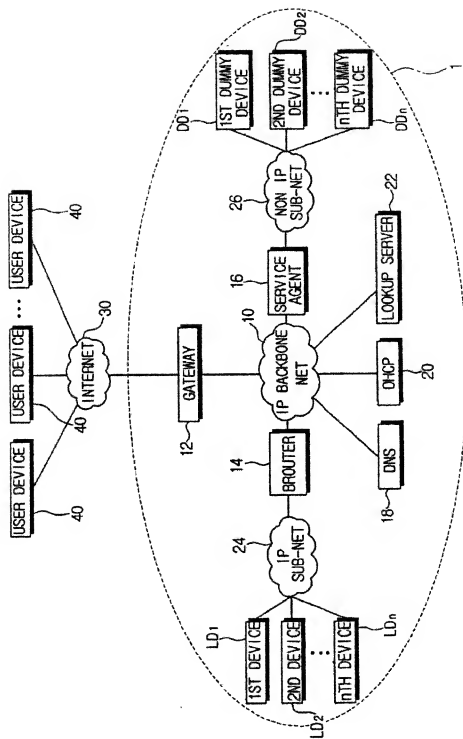


FIG. 4

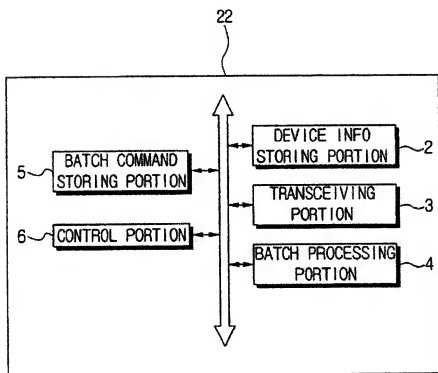


FIG.5

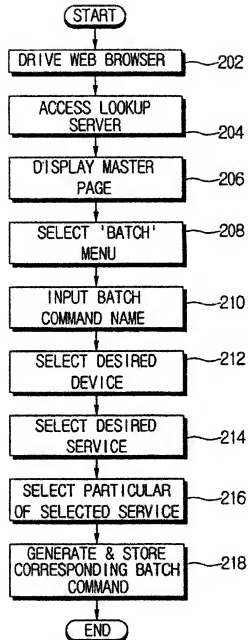


FIG. 6A

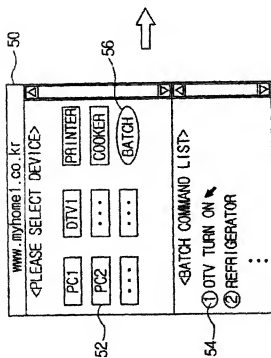


FIG. 6B

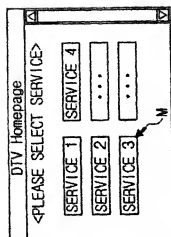


FIG. 6C

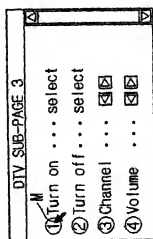


FIG. 6D

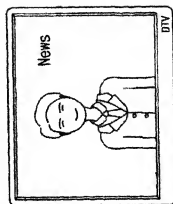


FIG. 7

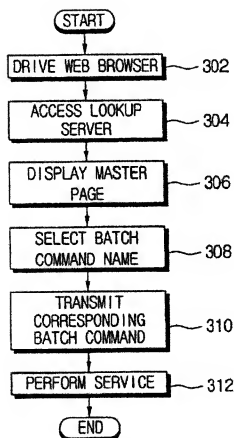


FIG. 8B

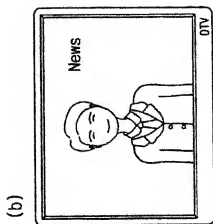
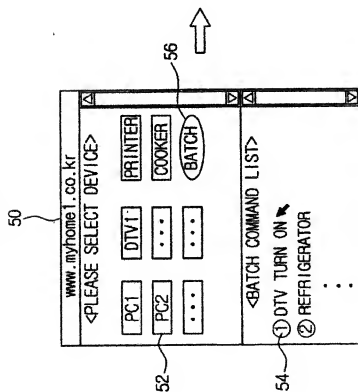


FIG. 8A





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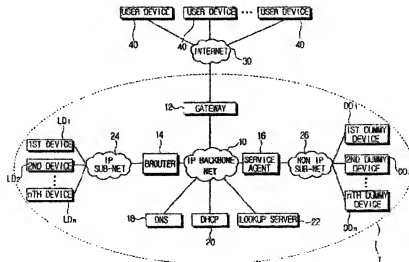
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(54) Apparatus and method for controlling a device in a home network and a home network system employing the same

(57) Apparatus and method for controlling devices within a home network (1), and a home network system employing the same. The apparatus (22) for controlling a plurality of devices (LD1-LDn, DD1-DDn) connected in the home network includes a batch processing portion (4) for generating a batch command for a certain service of services provided by the plurality of devices, to pro-

cess the certain service as one job, and a control portion (6) for controlling when a batch command is selected, the control portion (6) for controlling a certain device that is designated by the selected batch command operates in accordance with the selected batch command. Accordingly, operations of the devices (LD1-LDn) within the home network (1) for providing the service can be processed as one job.

FIG.3



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European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 01 30 9639

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (In ICL7)
A	<p>US 5 085 236 A (LEA RODGER J) 4 July 2000 (2000-07-04) * abstract * * column 2, line 35 - column 3, line 7 * * column 5, line 55 - column 6, line 31 * * column 6, line 50 - column 7, line 5 * * column 8, line 15 - column 9, line 14 * * column 9, line 43 - line 55 * * column 10, line 1 - line 62 * * column 11, line 46 - column 12, line 8 * * column 12, line 20 - line 54 * * column 12, line 59 - column 13, line 22 * * column 13, line 55 - column 14, line 39 * * column 14, line 60 - column 15, line 44 * * column 24, line 12 - line 36 *</p>	1-9	H04L12/28
A	<p>WO 00 04427 A (UNITED TECHNOLOGY PTY LTD ;NGO GET SEN (AU); PARSONS EHAN (AU)) 27 January 2000 (2000-01-27) * abstract * * page 1, line 34 - page 2, line 17 * * page 2, line 28 - line 32 * * page 3, line 10 - page 4, line 15 * * page 5, line 10 - page 6, line 13 * * page 7, line 11 - line 24 * * page 8, line 4 - line 15 * * page 11, line 5 - line 14 * * page 11, line 29 - page 12, line 21 * * page 12, line 35 - page 13, line 1 * * page 13, line 15 - line 30 *</p> <p style="text-align: center;">-/-</p>	1-9	<p>TECHNICAL FIELD SEARCHED (In ICL7)</p> <p>H04L</p>
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		14 November 2003	Laï, C
CATEGORY OF CITED DOCUMENTS			
<p>X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: prior art document</p>		<p>T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons</p>	
<p>A: member of the same patent family, corresponding document</p>			





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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION - (Int.Cl.7)
A	EP 0 929 170 A (SONY ELECTRONICS INC) 14 July 1999 (1999-07-14) * abstract * * column 1, line 1 - line 8 * * column 2, line 55 - column 4, line 13 * * column 7, line 4 - column 8, line 52 * * column 10, line 12 - column 11, line 5 * -----	1-9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>14 November 2003</b>	Examiner <b>Lai, C</b>
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if considered with another document of the same category A: technological background Q: non-written disclosure P: intermediate document		T: theory or principle underlying the invention E: earlier patent document, but published on or after the filing date D: document cited in the application L: document cited for other reasons S: member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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For more details about this annex see Official Journal of the European Patent Office, No 1260